CLAIMS

1. A method, comprising applying a biological fluid to an integrated microreactor comprising:

a semiconductor material body having a surface;

a buried channel extending in said semiconductor material body at a distance from said surface, and having a first and a second end;

a first and a second trench extending from said surface respectively as far as said first and second ends of said buried channel, and being in fluid connection with said buried channel;

a reservoir region formed on the surface of the semiconductor material body, extending above said surface and defining a first and a second reservoir connected to said first and second trenches, respectively;

wherein the biological fluid is applied to the first reservoir and travels via the first trench to the buried channel where a biological test is performed, and wherein the biological fluid then travels via the second trench to the second reservoir.

2. The method of claim 1, wherein the integrated devise further comprises a heating element arranged between said surface and said reservoir region, above said buried channel.

3. The method of claim 2, wherein the integrated device further comprises an insulating material region surrounding said heating element.

4. The method of claim 1, wherein the second reservoir further comprises a sensing electrode structure inside said second reservoir; where the sensing electrode senses the product of said biological test.

5. The method of claim 4, wherein said first and second reservoirs have, in cross section, larger areas than said first and second trenches.

6. The method of claim 5, wherein the biological fluid contains DNA and wherein the biological test comprises amplification and the product of said biological test is amplified DNA.

7. A method, comprising applying a biological fluid to an integrated microreactor comprising:

a semiconductor material body having a surface;

a buried channel extending in said semiconductor material body at a distance from said surface, and having a first and a second end;

a first and a second trench extending from said surface respectively as far as said first and second ends of said buried channel, and being in fluid connection with said buried channel;

a reservoir region formed on the surface of the semiconductor material body, extending above said surface and defining first and second reservoirs connected to said first and second trenches, respectively; and

a heating element arranged between said surface and said reservoir region, above said buried channel;

wherein the biological fluid is applied to the first reservoir and travels via the first trench to the buried channel where a biological test is performed, and wherein the biological fluid then travels via the second trench to the second reservoir.

8. The method of claim 7, the integrated microreactor further comprising an insulating material region surrounding said heating element.

9. The method of claim 8, the integrated microreactor further comprising a protective region arranged between said insulating material region and said reservoir region.

10. The method of claim 9, wherein the reservoir region is of a first resist and the protective region is of a second resist, and in that one of said resists is of a negative type and the other of said resists is of a positive type.

11. The method of claim 10, wherein said first resist is SU8.

12. The method of claim 11, wherein said first resist is á photosensitive dry resist.

13. The method claim 12, wherein the biological fluid contains DNA and wherein the biological test comprises amplification and the product of said biological test is amplified DNA.

14. A method, comprising:

introducing a biological fluid from a first reservoir into a first trench, the first reservoir and first trench being integrated in a semiconductor body, the first trench being formed in, and defined by, a resist layer formed on the surface of the semiconductor material body;

moving the biological fluid from the first trench into a buried channel, the buried channel extending in the semiconductor body at a distance from a surface of the semiconductor body, the first trench extending from the reservoir on the surface of the semiconductor material body to a first end of the buried channel;

the semiconductor material body having at least one integrated heating element positioned to heat the buried channel and an insulating material region surrounding said heating element;

heating and optionally cooling the biological fluid within the buried channel;

optionally repeating the heating and cooling steps as needed;

extracting the biological fluid from the buried channel into a second reservoir via a second trench, the second reservoir and second trench being integrated in the semiconductor body, the second trench extending from the second reservoir on the surface of the semiconductor material body as far as a second end of the buried channel; and

detecting a product within the biological fluid, where the detection step is performed by the use of an electrode, the electrode being integrated in the second reservoir.

15. The method of claim 14, wherein the biological fluid contains DNA and the product is amplified DNA.